

Jovian Magnetopause Boundary Layer Plasma Wave Spectra: Ulysses

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Electromagnetic waves near the ion cyclotron frequency are present within the Jovian magnetopause boundary layer. These waves have been demonstrated to be of sufficient intensity to cause cross-field diffusion of magnetosheath plasma onto closed magnetospheric field lines to form the boundary layer itself. Our present research effort will be to merge the Ulysses magnetometer and plasma wave data sets for all crossings to determine if broadband electromagnetic and electrostatic waves exist at Jupiter, and if so, if there are any identifying features that give clues as to their generation mechanism(s). The wave results will be compared to those in the Earth's boundary layer to determine if the same generation mechanism is common to both magnetospheres. An eventual goal of the study is to see if the Jovian aurora can be formed from resonant wave-particle interactions within the boundary layer, similar to the process which has been speculated to occur at the Earth creating the terrestrial (dayside) aurora.

1. 1995 IUGG Meeting

2. 001325224

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4. IAGA

5. a) GA 4.01
B. Smith

5. b) 2109 Discontinuities

6. Oral

7. O%

8. C

9. Yes